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## Effects of Message Repetition and Negativity on Credibility Judgments and Political Attitudes

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Research on the truth effect has demonstrated that statements are rated as more credible when they are repeatedly presented. However, current research indicates that there are limits to the truth effect and that too many repetitions can decrease message credibility. This study investigates whether message negativity contributes to this boomerang effect and whether the interaction of credibility and negativity influences political attitudes. These assumptions were tested in an online experiment in which the frequency of exposure to political campaign posters and message negativity were manipulated. The results show that negativity on political campaign posters functions as a crucial moderator, especially in combination with high-frequency exposure. Repeatedly presented negative posters resulted in a more negative attitude toward the presented political issue, which was mediated by a decrease in credibility judgments.

*Keywords: truth effect, campaign communication, negative campaigning, political campaign poster*

“Sixty-two thousand four hundred repetitions make one truth.” This famous quote by Aldous Huxley—author of *Brave New World*—implies that the more a statement is repeated, the more credible it is perceived to be. Hence, message repetition is an often-applied strategy in political campaigns. By repeatedly confronting the audience with the same claim, campaigners aim to increase the persuasive impact. The “truth effect” can explain these effects. Accordingly, recipients are more likely to hold a statement as true if they hear the statement multiple times. Empirical findings corroborate the notion that the repeated presentation of political messages increases message credibility and attitude change (Koch & Zerback, 2013; Miller, 1976).

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However, previous studies have not sufficiently considered the role of message characteristics in the truth effect. Most studies embedded claims in neutral messages and then manipulated the number of times participants were presented with the message (Dechêne, Stahl, Hansen, & Wanke, 2010). In political campaigns, messages are rarely neutral; often, they are negative and may include attacks on political opponents. This raises the question of whether the truth effect also unfolds when campaigners repeatedly confront their voters with negative messages.

Our aim in the study was to investigate the moderating influence of message negativity on the truth effect. For this purpose, we first discuss the truth effect and review research on the effects of repeated exposure to political messages. Second, we address factors that can reverse the truth effect and explain why message negativity may diminish the truth effect. Based on this literature review, we formulated hypotheses about how the repeated exposure to campaign posters affects credibility judgments and attitudes and how the negativity of posters moderates the effects of repetition. We then describe the design and results of an experiment and discuss the results, implications, and directions for future research.

### **The Effects of Message Repetition**

Message credibility refers to “perceptions of believability, either of the source or of the source’s message” (Metzger, Flanagin, Eyal, Lemus, & Mccann, 2003, p. 302). Research has identified four dimensions that positively influence message credibility (Metzger et al., 2003): message structure (e.g., how well the message is organized), message content (e.g., how well the message is written), message delivery (e.g., how quickly the message is communicated), and presentation style (e.g., how often the message is repeated). One hypothesis that focuses on the relationship between a message’s presentation style and the message’s credibility is the truth effect. According to the truth effect, the number of times a message is presented influences how recipients evaluate the message’s credibility. For instance, when a statement such as “Jimmy Carter was the only divorced U.S. president” is presented, the majority of people cannot be sure whether the statement is true. To form an opinion about such a statement, people tend to use heuristic cues, such as the statement’s source or the context in which the statement was presented (Dechêne et al., 2010). According to the truth effect, the subjective impression that the statement about Carter is true increases when people encounter the statement repeatedly (Hasher, Goldstein, & Toppino, 1977; Schwartz, 1982).

This effect can be explained through two different processes. First, the truth effect can be explained through a primarily unconscious and memory-based process. Accordingly, the repeated presentation of a statement leads the recipient to mistakenly believe that she/he has already heard the statement from another source (Arkes, Boehm, & Xu, 1991; Arkes, Hackett, & Boehm, 1989). Because humans learn in the socialization process to trust statements that are expressed by several different and independent sources, this promotes increased message credibility (Brown & Nix, 1996; Koch & Zerback, 2013). Second, the truth effect can be explained through a trust-based process. Repeated exposure to a message is assumed to increase the “processing fluency,” which is defined as the metacognitive experience of ease during information processing (Dechêne et al., 2010). The easier and more fluently that information can be processed, the more credible the information appears, regardless of the

statement's content (Reber & Schwarz, 1999). For instance, Reber and Schwarz (1999) showed that processing fluency can be increased by improving the visual contrast of a statement on a screen. It is irrelevant whether the repeated statement is actually true or false (Begg, Anas, & Farinacci, 1992; Brown & Nix, 1996) as long as the statement is sufficiently ambiguous so that the participants are uncertain about the statement's truth. Otherwise, the truth of the statement would be judged based on the participants' knowledge rather than on fluency (Dechêne et al., 2010).

The notion that repeated message exposure positively affects processing fluency is closely related to the mere exposure effect. The exposure to a previously unknown stimulus facilitates the subsequent processing of the stimulus (Bornstein, 1989), and this "mere repeated exposure of the individual to a stimulus is a sufficient condition for the enhancement of his attitude toward it" (Zajonc, 1968, p. 1). Thus, research on the truth effect emphasizes how processing fluency enhances credibility, and research on the mere exposure effect focuses on the implications of processing fluency for the evaluation and formation of attitudes toward stimuli.

As research on mere exposure effect indicates, message repetition not only results in higher credibility ratings of a message but also can influence attitudes of the recipients. The mere exposure effect suggests that message repetition can have a direct effect on attitudes. In addition, as research on attitude change and credibility shows, messages of credible communicators typically lead to more attitude change than messages from sources with low credibility (Choo, 1964; Hovland & Weiss, 1951). Accordingly, it is plausible to assume that message credibility mediates the effect of message repetition on attitude change: The more a message is repeated, the higher its credibility and the stronger its impact on attitudes will be.

The truth effect hypothesis is a useful concept to understand the effects of message repetition in political communication. The hypothesis suggests that message repetition is a crucial strategy in political campaigns because it can boost the credibility of political claims and election programs and increase the persuasive impact of a candidate or party. Still, the framework has rarely been applied in political communication research, although many studies in this field are based on the assumption that message repetition increases persuasive impact and attitude change (Bartels, 2006).

An exception is the study by Koch and Zerback (2011), who studied the effects of repeatedly presented campaign slogans. In their experiment, they found that if previous knowledge existed, exposure frequency affected the credibility of the slogans. More precisely, credibility continued to increase until three repetitions, but decreased after six statements. In line with these findings are the results of a study by Becker and Doolittle (1975), who investigated how repeated political radio advertisements affect the evaluation of candidates. They found that a moderate frequency of five political radio advertisements resulted in a higher affective candidate evaluation compared with the low frequency of only two repetitions.

Previous research on the effects of repetition on credibility judgments in the field of political communication indicates that the truth effect has its limits. Increasing the frequency of exposure does initially increase credibility and attitude change. However, overexposure to a political message can have

detrimental effects on credibility and attitude change, which implies that certain boundary conditions exist for the truth effect to unfold.

### **Boundary Conditions of the Truth Effect and the Moderating Role of Message Negativity**

In a meta-analysis of 51 studies, Dechêne et al. (2010) showed that the truth effect is a robust effect that holds for different message and statement types. Research shows that the effect occurs in trivia statements (Schwartz, 1982), opinion statements (Arkes et al., 1989; Koch & Zerback, 2013), political election campaign slogans (Koch & Zerback, 2011), and product-related claims (Hawkins & Hoch, 1992; Johar & Roggeveen, 2007). In addition, the truth effect is confirmed whether there is a delay of minutes (Arkes et al., 1989; Begg et al., 1992) or weeks (Hasher et al., 1977) between the repetitions of the statement and whether the statement is presented orally (Hasher et al., 1977) or in text (Hawkins & Hoch, 1992).

Despite the robustness of the effect, several studies indicate that the strength of the truth effect is affected by specific moderators. One crucial, but in research mostly neglected, moderator is the frequency of message repetition. Most studies that have established the truth effect presented the statements up to two times (Dechêne et al., 2010). Fewer studies have employed higher repetition rates. Hasher et al. (1977) and Gigerenzer (1984) presented statements three times, but could not prove a significant increase in the effect after the second presentation. Arkes et al. (1991) presented the statements six times, but found that credibility significantly increased only after the second exposure to the statement. In each of these studies, at least one week elapsed between the presented statements. Koch and Zerback (2011) studied the effect of one, three, and six repetitions across a few minutes and found that the credibility increased until three repetitions, but decreased again after six repetitions. Hawkins, Hoch, and Meyers-Levy (2001) presented a statement up to four times across a few minutes, finding a significant decrease in the effect after the statement was presented two times. These results first suggest that message repetition can increase credibility, but that boomerang effects can occur when a message is presented too often. Second, the optimal number of message repetitions seems to vary across studies. Notably, extant research does not provide a clear explanation for why the optimal number of repetitions varies.

An explanation may be found in additional variables that have been shown to moderate the truth effect. It has been suggested that characteristics and psychological states of the recipient (Arkes et al., 1989; Koch & Zerback, 2011) and characteristics of the message (Unkelbach, 2007) are important determinants. A crucial message characteristic in political communication research is negativity, which is a commonly used and highly successful strategy in political campaigns (Ansolabehere & Iyengar, 1995). Lau and Pomper (2002) define negative campaigning as "talking about the opponent—his or her programs, accomplishments, qualifications, associates, and so on—with the focus, usually, on the defects of these attributes" (p. 46). It includes all form of attacks on the opponent and describes a technique in which politicians and parties focus on the supposed weaknesses of their opponents rather than on their own strengths (Brettschneider, 2008; Lau & Rovner, 2009). Ansolabehere and Iyengar (1995) describe the popularity of this tactic as follows: "In politics, the best defense is a strong offense" (p. 116). In political news media, negativity is furthermore one of the most relevant news values (e.g., Galtung & Ruge, 1965)

and an often-applied strategy by journalists (e.g., Esser, Engesser, Matthes, & Berganza, 2016). Negativity is prevalent in contemporary politics and news media, and it is an ongoing debate whether negative campaigns harm or benefit candidates, voters, and the political process itself (e.g., Geer, 2006). Accordingly, the empirical evidence about the effects of negative political campaigns is inconclusive (Allen & Burrell, 2002; Lau, Sigelman, & Rovner, 2007). Several studies have shown that negativity decreases voter turnout (Ansolabehere & Iyengar, 1995) and lowers candidates' evaluations (Pentony, 1998). Other empirical findings indicate positive effects of negativity such as higher audience recall (Kahn & Kenney, 2000) or increased political participation (Martin, 2004).

More important, the interactive effects of message negativity and repetition on credibility judgments have not been intensively investigated. Extant research only indicates that the repetition of negative messages can negatively impact evaluations of the communicator and likelihood of voting (Fernandes, 2013; Reinhard, Schindler, Raabe, Stahlberg, & Messner, 2014). For instance, Fernandes (2013) investigated the effects of repeated negative campaign ads on candidate evaluations and likelihood of voting. She found that evaluations of the candidate who sponsored the negative, attacking ad within a TV program followed an inverted-U curve. After three repetitions, the evaluation of the candidate sponsoring the ad and the likelihood of voting for that candidate increased (compared with a single ad), but it decreased again after five repetitions if the ads were placed close together within the commercial block. No significant effects were reported for the target actor in this massive presentation condition. If the negative political ads were spread out across the entire TV program (three commercial blocks), the evaluation of the candidate sponsoring the ad and the likelihood of voting for that candidate increased with every repetition. In the spaced presentation condition, both evaluation of the target and likelihood for voting for the target decreased.

However, we lack empirical evidence that clarifies whether such patterns also hold for credibility judgments and whether the trajectories are different for negative and nonnegative messages. A concept that may help to answer these questions is the attention bias hypothesis. According to this, humans pay more attention to negative information and accordingly negative stimuli elicit higher levels of attention (Lang, Newhagen, & Reeves, 1996; Smith et al., 2006). Attention biases have been shown to unfold in the processing of political information: When confronted with negative political information, recipients are more responsive and attentive toward the stimulus and process the content more intensively (Soroka & McAdams, 2015). The attention bias hypothesis suggests that the optimal number of repetitions should be different for negative and nonnegative messages: Due to the higher level of attention and the more intensive processing of the information, negativity results in the earlier recognition of the persuasive attempt, and this recognition then, according to Koch and Zerback (2013), decreases the credibility of the communicator and/or the message. In line with this proposition, Fernandes (2013) showed that with massive repetition of negative messages, the candidate's evaluation, and likelihood for voting of the sponsor decreased after too many repetitions. Thus, the trajectories of the effect of message repetition on credibility judgments should be different for negative and nonnegative messages: Repeating a nonnegative or negative message a few times should positively affect credibility. However, when exposure frequency is further increased, the credibility associated with the negative message should decrease, whereas it should further increase for the nonnegative message. In short, the optimal number of repetitions is likely to be lower for negative than for nonnegative messages.

### **The Influence of Credibility on Persuasion and Attitude Change**

Effects of message repetition and negativity on credibility judgments are of particular relevance in political campaigns because credibility is a crucial determinant of political attitudes and behaviors. Dual process models (Chaiken, 1980; Petty & Cacioppo, 1986) suggest that credibility is a crucial heuristic that leads to more compliant information processing, less reactance, and more positive attitudes. Accordingly, it has been shown that messages of credible communicators lead to more attitude change than do messages from sources with low credibility (Choo, 1964; Hovland & Weiss, 1951; Powell, 1965). Thus, it is plausible that message credibility mediates the effect of message repetition on attitude change. Depending on the negativity of a message, the frequency of exposure may increase or decrease credibility judgments, which, in turn, influence the evaluations and attitudes.

### **The Effects of Repeated Exposure to Neutral and Negative Campaign Posters**

Political campaign posters are “large sheets printed for outdoor display” (Seidman, 2008, p. 5) that are used to promote political candidates or communicate political messages. We chose to focus on political campaign posters for three reasons. First, they are a traditional medium of political communication, which plays an integral part in contemporary campaigns (Seidman, 2008). Second, especially in election times, voters experience a high degree of poster exposure; thus, the repeated presentation of posters in an experimental context warrants a certain degree of ecological validity. Third, the truth effect has successfully been proven with statements on campaign posters (Koch & Zerback, 2011).

During election times, voters are generally confronted with a tremendous number of political campaign posters, which advertise for a candidate or argue in favor of (or against) a specific political issue. Especially in elections campaigns on complex policy issues, voters are hardly convinced by the statement if only confronted with it once. A moderate frequency exposure is needed: Voters tend to process the advertised information on the policy issue more fluently and rate the statement as familiar, which eventually results in a higher credibility judgment of the presented statement. Following the truth effect hypothesis, we assumed that being exposed to a campaign poster with a political factual statement a moderate number of times should increase the evaluation of the message’s credibility, compared with being exposed to the poster and the statement only once (e.g., Dechêne et al., 2010). Research in political campaign communication has corroborated these findings (e.g., Becker & Doolittle, 1975; Koch & Zerback, 2011), which led to our first hypothesis:

*H1: Being exposed to a factual statement on a political campaign poster a moderate number of times leads to a higher credibility of the statement than being exposed to the statement only once.*

As discussed, however, there are limits to the truth effect, and a high number of repetitions can reduce message credibility (e.g., Arkes et al., 1991; Fernandes, 2013; Hawkins et al., 2001; Koch & Zerback, 2011). More important, we argue that the negativity of a campaign poster influences whether a high number of repetitions has a positive or a negative effect on credibility. According to the attention bias hypothesis, voters pay more attention to negative campaign posters than to nonnegative or neutral

posters. Consequently, the optimal number of repetitions should be different for negative and for nonnegative campaign posters. Because voters are more responsive and attentive and process the political slogan of a negative campaign poster more intensively, they recognize the persuasive attempt earlier. Consequently, a high number of repetitions, compared with a moderate number of repetitions, does not further increase the credibility of the negative poster's political statement, but rather decreases the credibility. This is in line with the findings of Fernandes (2013), whose study showed that the candidate's evaluation and vote likelihood decreased after a moderate repetition if the negative ads were presented closely together. In contrast, if a poster is nonnegative or neutral, it is processed less intensively, and more repetitions are required until the persuasive attempt is recognized. Accordingly, increasing the number of repetitions from moderate to high should further increase the credibility of the poster's statement. We thus formulated the following interaction hypothesis:

*H2: The effect of being exposed to a factual statement on a political campaign poster a high number of times instead of a moderate number of times depends on the poster's negativity: (a) Increasing exposure to a negative campaign poster decreases the statement's credibility; (b) increasing exposure to a nonnegative or neutral campaign poster increases the statement's credibility.*

Finally, as discussed, credibility is a crucial determinant of political attitudes, and messages with a high credibility have a stronger impact on attitudes than messages with a low credibility (e.g., Choo, 1964; Powell, 1965). Accordingly, we assumed that credibility functions as a mediator of the effects of repeated exposure to campaign posters about a political issue on political attitudes toward the same issue. As noted, repeated exposure to a campaign poster that includes a message about a political issue will increase the credibility of the poster's message. In turn, the increased credibility of the poster's message will be positively associated with the attitude toward the political issue addressed on the poster. Therefore, the following hypothesis was formulated:

*H3: The effect of message repetition on the attitude toward the presented issue is mediated by the perceived credibility of the statement. The more credible a factual statement on a campaign poster about a political issue is perceived, the more positive is the attitude toward the political issue.*

### Method

An online experiment using a 3 × 2 between factorial design was used to test the hypotheses. The first factor was the frequency of the campaign poster presentation (one, three, six), and the second factor was the design of the campaign poster (neutral, negative). The participants were split into six groups and presented with either a neutral or negative poster that showed an identical statement on a political issue one, three, or six times. In addition, the participants were presented with five filler posters that did not promote any political position. The filler posters were used to ensure that participants were not exclusively exposed to the target posters and that there was a small time delay between the contacts with the target posters. With the repetition factors of the target and filler posters, we replicated the study design of Koch and Zerback (2011), which has been successfully employed to test the truth effect with political campaign posters. A cover story was used to ensure that participants viewed the same campaign posters repeatedly without identifying the purpose of the study or becoming bored. Participants were told that they would be presented with a series



of campaign posters in different urban settings (e.g., near a train station, in a pedestrian area) and that they had to evaluate how well suited each setting was for placing a campaign poster.

### ***Participants and Procedure***

In total, 205 participants were randomly assigned to one of the six treatment groups. The average age of the participants was 32 years, and 51% were women. The political positions of the participants were equilibrated and spread within the left-right spectrum ( $M = 3.25$ , on a scale from 1 to 7). Random assignment produced group sizes ranging from 27 to 39.

The experiment was administered online in May and June 2012. Participants for the online survey were recruited through a series of mailing lists. A link to the online survey was included in the e-mail. The survey started with a brief introduction that presented the cover story. Participants were instructed to evaluate the placement of a series of campaign posters in different urban settings. Subsequently, campaign posters were presented one by one and participants had to evaluate the placement of each poster separately. Once the participants had evaluated the placement of a poster, they could click on a button to proceed to the evaluation of the next poster's placement. Finally, after the whole series of campaign posters had been presented, participants completed a questionnaire that assessed the two dependent variables and several control variables.

### ***Stimulus Materials***

The campaign posters addressed the issue of gene technology. This issue was chosen for two reasons. First, the issue was at the time not on the public agenda, which ensured that the participants of the study did not have detailed knowledge or strong attitudes toward the issue. Second, there existed two parties with contradictory positions regarding the issue, which enabled us to construct credible, negative campaign posters on which one party attacked the other. The two parties were the Liberal Party and the Green Party of Switzerland. The Liberal Party seeks to protect civil liberties and individual responsibility, is committed to supporting research, and generally takes a positive position regarding gene technology. The Green Party promotes environmentalism and green means of transportation and hence is strongly opposed to gene technology. Thus, within the traditional positions of the two selected parties, it is conceivable that the parties would campaign against each other on a ballot.

In a pilot study, we tested the perceived authenticity and negativity of 10 campaign posters. More specifically, we tested which combination of sponsoring party and target party was perceived as most authentic and which poster slogans produced the most pronounced difference in perceived negativity. Five posters were sponsored by the Liberal Party. Three of these posters were presumably negative and included an attack on the Green Party. Two posters were presumably neutral and did not include any attack. Similarly, three negative posters and two neutral posters sponsored by the Green Party were included. In addition, two filler posters, which were not sponsored by any party but just announced the popular vote, were included in the pilot study. Thirty-three participants were instructed to evaluate the authenticity and negativity of the posters. The goal was to first identify whether posters sponsored by the Liberal or the Green Party were evaluated as more authentic. The results indicated that

the posters that were sponsored by the Liberal Party were regarded as most authentic.<sup>1</sup> Second, we checked which pair of negative and nonnegative posters sponsored by the Liberal Party led to the largest difference in negativity. The pair that produced the largest difference in negativity,  $M_{\text{Difference}} = 4.85$ ,  $SD_{\text{Difference}} = 1.54$ ,  $t(14) = 12.19$ ,  $p \leq .01$ , was selected for the main study.

Both posters included a political slogan, an identical factual statement about the political issue, a voting recommendation, and the date of the upcoming election. However, the two campaign posters differed with regard to the negativity in the political slogan. The neutral poster included a slogan promoting gene technology ("Promote progress—support research") without attacking the political opponent. In contrast, the negative poster included a slogan with an attack on the Green Party and depicted a woman sitting in a wheelchair, keeping her hands in front of her face. The slogan beneath the picture read, "Do you vote like the Greens? We choose human!—Gene technology saves lives." Thus, the negative campaign poster suggested that the Green Party did not care about disabled people because they opposed gene technology and the potential remedies that may emerge from it.

The manipulation of message repetition consisted of presenting the respective campaign poster (i.e., the neutral or negative poster) one, three, or six times. In addition to the target poster, participants rated the position of five filler posters that advertised for the fictitious ballot but did not take any position.

The designed campaign posters were embedded in pictures of original poster placement (billboards) in different urban settings in Switzerland to ensure a high ecological validity of the online experiment. Participants were informed that they had to evaluate each placement of the campaign posters in various urban settings to make the repeated poster presentation plausible. A question about the quality of the poster placement was asked immediately after every poster presentation to ensure that the participants were forced to draw attention to the poster and to prevent the participants from instantly clicking to the next picture. The rather complicated political slogan of the Liberals ("In Switzerland, 90 genetically engineered drugs help against 153 known diseases") was presented identically on the neutral and attacking campaign posters. Because the experiment was online, the slogan formulation was complex to avoid the risk of participants easily verifying or falsifying the statement by searching the Internet. To avoid possible primacy and recency effects, we randomized the order of presentation of the target posters and the filler posters. Stimuli examples of all poster types are depicted in the Appendix.

### Measures

The survey measured the participants' attitudes toward the presented posters, the credibility of the factual statement, participants' attitude toward gene technology, and a series of covariates. All measures were based on 7-point rating scales (1 = *strongly disagree*, 7 = *strongly agree*). All items for all assessments in the questionnaire were in German.

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<sup>1</sup> Overall, the selected posters for the main study of the Liberal Party reported higher mean values for authenticity for the negative ( $M = 5.51$ ,  $SD = 1.10$ ) and neutral poster ( $M = 5.65$ ,  $SD = 0.96$ ) than the highest scoring negative ( $M = 4.30$ ,  $SD = 1.45$ ) and neutral poster ( $M = 4.80$ ,  $SD = 1.20$ ) of the Green Party.

To check whether the manipulation of the posters' negativity had succeeded, we measured participants' perceptions of negativity with four items (e.g., "The campaign poster tackles a political party"). The items formed a reliable measure ( $\alpha = .93$ ), and a mean index for perceived negativity was calculated ( $M = 3.55$ ,  $SD = 1.33$ ).

The first dependent variable, the credibility of the statement, was measured with an adapted version of the Truth Effect Scale by Koch and Zerback (2011). The scale included three items (e.g., "I think the statement 'In Switzerland, 90 genetically engineered drugs help against 153 known diseases' is credible"). The three items formed a reliable measure ( $\alpha = .92$ ), and a mean index for credibility was formed ( $M = 4.08$ ,  $SD = 1.45$ ).

The second dependent variable, participants' attitude toward the political issue (i.e., gene technology), was measured with three items (e.g., "There are good reasons to vote for the gene technology initiative"). The three items formed a reliable measure ( $\alpha = .72$ ), and a mean index for a positive attitude toward gene technology was formed ( $M = 4.30$ ,  $SD = 1.12$ ).

Furthermore, the questionnaire asked about political party identification, routine demographics, and the seriousness of the respondents' participation.

To corroborate that the indicators for the three variables (perceived negativity, credibility, and attitude) represented three distinct constructs, we conducted a principal axis factor analysis (oblimin rotation, eigenvalue criterion for factor extraction). The factor analysis identified the three expected dimensions (70% explained variance). More important, each indicator exclusively loaded on the appropriate dimension (all loadings  $\geq .46$ ) and not on any other dimension (all loadings  $\leq .09$ ) such that no substantial cross-loadings existed. Thus, we can assume that the indicators formed distinct constructs.

## Results

### *Treatment Check*

To verify the manipulation of poster negativity, we conducted a one-way analysis of covariance with poster type (neutral vs. negative) as the independent variable and perceived negativity as the dependent variable. As controls, frequency, credibility, attitude attitudes toward gene technology, and identification with the Green Party were included as covariates in the analysis. As expected, the neutral poster was evaluated as significantly less attacking and critical ( $M = 2.58$ ,  $SD = 1.45$ ) than the negative poster ( $M = 5.50$ ,  $SD = 1.53$ ),  $F(1, 199) = 189.64$ ,  $p \leq .001$ ,  $\eta^2 = .49$ . Thus, we can assume that the manipulation worked as intended.

### *Testing of Hypotheses*

To test the three hypotheses, we conducted indirect effect analyses using Hayes's (2013) *process* macro. Because our main independent variable message repetition was multicategorical, we followed the approach outlined by Hayes and Preacher (2014) and recoded the experimental conditions into two

dummy variables. The moderate-frequency condition (i.e., three repetitions) functioned as the reference group. A (negatively coded) dummy for the low-frequency condition (i.e., one repetition) and a dummy for the high-frequency condition (i.e., six repetitions) were entered as independent variables in the mediation models. Accordingly, the two dummy variables assessed the effects of a change from low to moderate frequency and a change from moderate to high frequency. The attitude toward gene technology was included as the dependent variable and credibility judgment as the mediator. In both analyses, an interaction between frequency and poster type (0 = *neutral*, 1 = *negative*) on credibility was added to the mediation model. Identification with the Green Party and the high-frequency (Model 1) and low-frequency dummy (Model 2) were included as covariates.<sup>2</sup> Table 1 presents an overview of the descriptive statistics and mean comparisons of credibility judgments and attitudes toward gene technology across the frequency and poster type conditions.

**Table 1. Overview of the Means, Standard Errors, and Group Differences.**

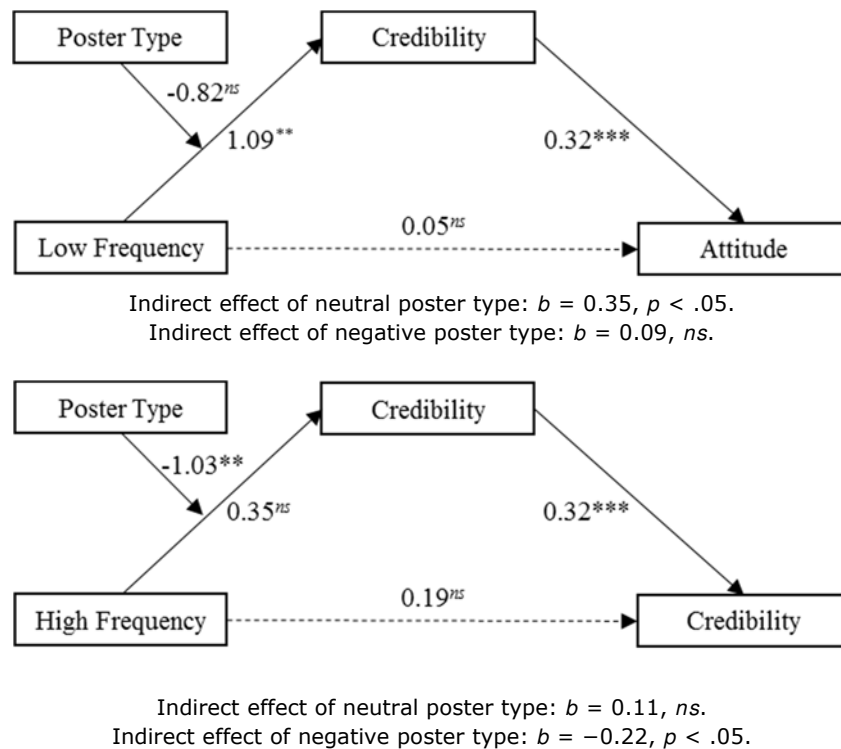
Poster type	Frequency condition							
	Low		Moderate		High		Overall	
	<i>n</i>	<i>M (SD)</i>	<i>n</i>	<i>M (SD)</i>	<i>n</i>	<i>M (SD)</i>	<i>n</i>	<i>M (SD)</i>
Credibility judgment of the statement								
Combined	69	3.72 (1.40) <sub>a</sub>	59	4.37 (1.44) <sub>b</sub>	73	4.22 (1.48) <sub>ab</sub>	201	4.10 (1.46) <sub>ab</sub>
Neutral	36	3.53 (1.54) <sub>a,y</sub>	27	4.22 (1.36) <sub>ab,y</sub>	39	4.55 (1.52) <sub>b,y</sub>	102	4.10 (1.54) <sub>ab,y</sub>
Negative	33	3.93 (1.21) <sub>a,y</sub>	32	4.50 (1.52) <sub>a,y</sub>	43	3.85 (1.36) <sub>a,z</sub>	99	4.09 (1.38) <sub>a,y</sub>
Attitude toward gene technology								
Combined	69	4.10 (1.10) <sub>a</sub>	59	4.33 (1.13) <sub>a</sub>	73	4.49 (1.33) <sub>a</sub>	201	4.31 (1.20) <sub>a</sub>
Neutral	36	3.93 (1.14) <sub>a,y</sub>	27	4.40 (1.17) <sub>ab,y</sub>	39	4.75 (1.37) <sub>b,y</sub>	102	4.37 (1.28) <sub>ab,y</sub>
Negative	33	4.27 (1.04) <sub>a,y</sub>	32	4.28 (1.11) <sub>a,y</sub>	34	4.19 (1.24) <sub>a,y</sub>	99	4.25 (1.12) <sub>a,y</sub>

*Note.* All mean comparisons are based on Bonferroni post hoc tests. Means with different subscripts differ significantly from each other ( $p < .05$ ). Subscripts before the comma refer to comparisons across frequency conditions (columns). Subscripts after the comma refer to comparisons across poster types (rows).

The first hypothesis predicted that increasing the frequency of exposure to a campaign poster from low to moderate would positively influence the perceived credibility of the factual statement presented on the poster. The results of the first model including the low-frequency condition as the

<sup>2</sup> This specification was necessary because *process* permits only one independent variable per model (Hayes, 2013).

independent variable showed that the credibility of the statement significantly increased ( $b = 1.09$ ,  $SE = 0.33$ ,  $p < .01$ ) when the poster was presented three times ( $M = 4.37$ ) instead of only one time ( $M = 3.72$ ). Moreover, there was no significant interaction effect of the poster type and the low-frequency condition dummy on the credibility judgment ( $b = -0.82$ ,  $SE = 0.42$ ,  $ns$ ). Overall, these results corroborate that the political statements were rated as more credible after a moderate frequency of three repetitions compared with the low-frequency condition of only one repetition. H1 was therefore supported (see Figure 1).



**Figure 1. Indirect effects of low and high frequency on attitude. In each model, the indirect effect through the other frequency dummy (low vs. high) and the identification with the Green Party were controlled.  $^{**}p < .01$ .  $^{***}p < .001$ .**

The second hypothesis proposed that the effect of increasing poster exposure from a moderate to a high frequency on the credibility of the poster's statement would be moderated by message negativity. The hypothesis argued that credibility would decrease in the high-frequency condition when negative campaign poster was presented (H2a), whereas high exposure to a neutral or nonnegative campaign poster would further increase credibility (H2b). We found that increasing the overall exposure from a moderate- ( $M = 4.37$ ) to a high-frequency condition ( $M = 4.22$ ) had no direct effect on credibility ( $b = 0.35$ ,  $SE = 0.32$ ,  $ns$ ). In line with the hypothesis, we can however report a significant interaction between the poster type and the high-frequency dummy ( $b = -1.03$ ,  $SE = 0.41$ ,  $p < .01$ ). The negative interaction

suggests that the effect of increasing the frequency of exposure from three to six times was more negative when the campaign poster was negative. To gain a better understanding of the interaction and conclusively evaluate the hypothesis, we inspected the conditional effect of exposure for the negative and the neutral posters. We found that the increase in repetition had a negative effect on message credibility for the negative poster ( $b = -0.68$ ,  $SE = 0.32$ ,  $p < .05$ ). Credibility ratings were lower for the high-frequency ( $M = 3.85$ ) than the moderate-frequency condition ( $M = 4.50$ ). In comparison, the increase from the moderate- ( $M = 4.22$ ) to the high-frequency condition ( $M = 4.55$ ) had no significant effect on credibility for the neutral poster ( $b = 0.35$ ,  $SE = 0.32$ ,  $ns$ ). Thus, H2 was partly corroborated: Being frequently exposed to a negative campaign poster did indeed reduce the statements' credibility, which supported H2a. However, H2b was rejected: A high frequency of exposure to a neutral poster did not increase credibility as compared with a moderate frequency. Credibility ratings of the neutral poster's message were about the same and not significantly different in the moderate- and the high-frequency conditions.

The third hypothesis predicted that the more credible a political statement about a political issue is perceived, the more positive is the attitude toward the political issue. As expected, perceiving the statement about gene technology as credible had a positive effect on the attitude toward the issue of gene technology ( $b = 0.32$ ,  $SE = 0.05$ ,  $p < .001$ ). Thus, H3 was corroborated.

The identified relationships between exposure, credibility, and attitudes, and the interaction between negativity and the high-exposure dummy indicated that (conditional) indirect effects existed. To quantify these effects, we inspected the results of the indirect effects analyses (see Hayes, 2013). Significance tests of the indirect effects were based on bias-corrected bootstrap confidence intervals (5,000 bootstrap samples). First, we found that presenting the campaign poster three times instead of one time had a positive indirect effect through credibility on the attitude toward gene technology ( $b = 0.26$ ), 95% CI [0.01, 0.58]. Second, we found that increasing the frequency of exposure from moderate to high had a negative indirect effect on the attitude toward gene technology when the poster message was negative ( $b = -0.22$ ), 95% CI [-0.49, -0.02], but not when the message was neutral ( $b = 0.11$ ), 95% CI [-0.07, 0.35]. Thus, exposure frequency and poster negativity had a joint effect on the perceived credibility of the political, factual statement, which, in turn, affected the political attitude.

## Discussion

The aim of this study was to investigate the effects of statement repetition and message negativity in the context of campaign communication. The results demonstrated that especially in combination with high repetition, negativity is a crucial moderator to explain a decrease of credibility judgments and attitude toward a political issue.

The study conducted two moderated mediation analyses. We found that the frequency of the poster presentation had an indirect effect on the attitude toward gene technology through its effect on message credibility. The mediation models revealed that message negativity functioned as a moderator of these mediation mechanisms: A high number of repetitions had only an indirect negative effect on attitude through message credibility when the poster was negative.

To summarize, we found evidence for the main assumption that message negativity is a crucial moderator of the effects of message repetition on credibility. This study revealed that negative messages can have a weaker persuasive impact. The finding is in line with current research, which has shown that negative messages can lead to a backlash effect (Ansolabehere & Iyengar, 1995; Fridkin & Kenney, 2011; Lau & Rovner, 2009).

The study has three theoretical implications for the truth effect hypothesis. First, the study corroborated that a moderate message repetition positively influences credibility ratings. However, we also found that the truth effect is limited and that message credibility decreases after too many repetitions. Second, the study suggests that negativity is an important message characteristic, which influences the optimal number of repetitions. This finding implies that we can further improve our understanding of the effects of message repetition by investigating the moderating influence of additional message characteristics as well as characteristics of the recipient. For instance, dual process theories (e.g., Chaiken, 1980) indicate that the recipient's involvement may affect how intensively messages are processed, which, in turn, should influence which number of repetitions maximizes message credibility. Third, the study is in line with previous research on the truth effect by showing that repetitions within a short timeframe affect the persuasive impact of a stimulus. However, the finding also raises the question about whether similar effects would arise when the time interval between repetitions is increased. Fernandes (2013), for example, showed that candidate evaluations and likelihood of voting improved only if ads were repeated over a larger time period. Hence, the time interval between repetitions may affect the relationship between the number of repetitions, message credibility, and attitudes and should be considered as an additional crucial moderator.

Our results have practical implications for communication specialists and political campaign managers. Our study indicates that simply relying on repetition as a persuasive tool might not always be crowned with success. Message characteristics—notably, negativity—have to be considered in the planning of a campaign because they influence optimal exposure frequencies. Indeed, the optimal number of repetitions may be different in real-life campaigns because of the lower attention of the audience and interference from additional factors. Nevertheless, message negativity may still influence the effects of repeated exposure in actual campaigns, and communication specialists should thus consider this factor when piloting their messages. In particular, communication specialists should take into consideration that negative or attacking campaign ads may backfire, especially if voters are confronted with identical negative ads several times within a short time interval.

There are some limitations to this study that must be considered. One limitation involves the use of an experiment. First, the study ignored the contextual factor of real campaigns because the poster and the ballot were fictitious, and experimental design in general can never capture all the dynamics of political campaigns. For example, the participant relied only on the information they received within minutes, without having any further details about the political issue and positions of the involved parties. Moreover, the study ignored that the external validity was restricted because participants were aware of the experimental situation. Although the real object of the study was not revealed and a cover story was used, participants probably paid more attention to the presented campaign poster than they would in real-life situations, which may have elicited higher negative feelings. However, it should be noted that the

experimental design, in return, has the advantage that it ensured the internal validity of the findings and allowed us to establish causal relationships. Furthermore, the external validity of the stimuli was enhanced by presenting the posters in naturalistic settings using original pictures. This presentation mode presumably decreased the amount of attention that the participants directed toward the content of the posters too, which should also support external validity because individuals are unlikely to pay full attention to campaign posters on the street.

A second limitation refers to the negativity type the study used. Fridkin and Kenney (2011) showed that the impact of negative information is multifaceted, and not all citizens are equally influenced by negative campaign ads. Our study investigated only the effects of one party directly attacking the position of another party. As Dardis, Shen, and Edwards (2008) demonstrated, the effects of issue-based attacks are not identical with character-based attack ads, and as Chou and Lien (2013) examined, the process furthermore depends on the appeal type (rational vs. emotional appeal). Next to the perception of negativity, the design of the negative poster type could have possibly elicited other negative values or emotions. Future research should explore whether other types of negativity have the same impact by differentiating between direct (personal) attacks in contrast to negative arguments about a political issue and varying the degree of emotional appeal. Moreover, the influence of different negative poster designs on negative emotions and values and their effects on political attitudes should be investigated.

Finally, the study did not directly consider the effects of psychological reactance, which also functions as a boundary condition for the truth effect (Koch & Zerback, 2013). Psychological reactance is a social psychological concept that explains human behavior in response to an actual or potential loss of freedom in the environment (J. Brehm, 1966). Individuals are assumed to be free to select a position on an issue, but this freedom can be threatened by various pressures to adopt or change their position (S. Brehm & Brehm, 1981). Accordingly, psychological reactance is an aversive motivational state directed toward restoring behavioral freedoms that are threatened in order to assert autonomy. Koch and Zerback (2013) showed that a high frequency of repetition can trigger these feelings of reactance, because recipients interpret the high exposure as a persuasive tactic by the communicator. If the recipient identifies this intent of persuasion, it is automatically perceived as a threat to the recipient's freedom (J. Brehm, 1966), which will result in psychological reactance (e.g., Moyer-Gusé, Jain, & Chung, 2012). Moreover, Meirick and Nisbett (2011) demonstrated that negative political ads provoke higher levels of reactance compared with positive ones. The authors demonstrated that, when confronted with persuasive political ads, negative ads promote a stronger source derogation (one possible reactance modality that results in lower opinions about the communicator), which results in a higher level of felt reactance when compared with positive campaign ads. We therefore expect that message negativity would elicit higher feelings of reactance, which would result in the decrease of the statement's credibility. Future research should address the direct relation of psychological reactance and message negativity and examine whether psychological reactance mediates the effect of negative message repetition on message credibility.

To conclude, this study adds to the current research on the effects of message repetition on credibility judgments and attitudes. Previous studies on the truth effect have not distinguished between different message valences. This study contributes to the field by simultaneously investigating the effects of negative and nonnegative messages. Furthermore, it demonstrates that the repeated presentation of



negative messages influences not only candidate evaluations and the likelihood of voting but also message credibility and attitudes toward political issues. We also demonstrated that negativity on campaign posters can function as a crucial moderator of repetition effects on credibility judgments. Similarly, we showed that the valence of a stimulus can explain the inverted-U curve and the decrease of credibility ratings after a high number of repetitions. Finally, we showed that repeatedly presented negative posters resulted in a more negative attitude toward the presented political issue, which was mediated by a decrease in credibility judgments.

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## Appendix



**Figure A1. Stimuli example of negative campaign poster in an urban setting.**



**Figure A2. Stimuli example of neutral campaign poster in an urban setting.**



*Figure A3. Stimuli example of filler campaign poster in an urban setting.*